

REMARKS/ARGUMENTS

Favorable reconsideration of this application as currently amended and in light of the following discussion is respectfully requested.

Claims 1-4 remain pending, with Claims 1-3 being presently active in this application, Claim 4 having been previously withdrawn from consideration. By the present amendment, Claims 1 and 4 are amended.

In the outstanding Office Action Claim 1-3 were rejected under 35 USC §103(a) as being unpatentable over Spierings et al (6,045,715, hereinafter called "Spierings") in view of Niwayama (JP-09027469A, hereinafter called "Niwayama").

In light of the outstanding rejection, Claims 1 and 4 have been amended to clarify the claimed invention and thereby more clearly patentably define over the cited prior art references. To that end, these claims have been amended to clarify that the first etching solution removes small defects or micro-cracks from a surface of the glass substrates and the second etching solution flattens the surface of the glass substrates. Support for these changes to Claims 1 and 4 is found at page 3, lines 11-24 of the specification. Accordingly, no new master has been added.

Briefly recapitulating, Applicants' invention as stated in amended Claim 1 is directed to a method of manufacturing a liquid crystal display device (LCDD) employing two different etching treatments and effects, one having a faster etching rate than the other. As stated in amended Claim 1, etching at the faster etching rate is firstly performed and subsequently etching at the less fast etching rate is performed. Furthermore, as claimed, the two different etching treatments are intentionally carried out in two separate etching process machines. In the claimed invention, the etching at the faster etching rate is performed for removing small defects or micro-cracks from a surface of the glass substrates while etching at the less fast etching rate is performed for finely flattening the surface of the substrate.

Furthermore, as disclosed in the specification at page 7, line 5 to page 8, line 7, the faster etching treatment not only removes small defects or micro-cracks from a surface but roughly flattens the surface of the substrate, effectively thinning the substrate. The flattening and thinning by the faster rate etching treatment shorten the process interval so as to improve productivity of the device.

Spierings discloses a dependence of etching time of samples on concentration of the etching solution. However, Spierings fails to disclose both an order between the original etching solution and the modified etching solution and effects of the etching solutions. Spierings only incidentally mention the etching time and fails to disclose sequentially utilizing the etching solution from a view point of the effects of the etching times on the substrate. The effect of Applicants' claimed invention, which produces a final product characterized by smoothness of the surface of the substrate, is realized only by the sequential-etching method of the claimed invention, and is not in any way taught by Spierings.

On the other hand, Niwayama discloses etching a silicon oxide film on a semiconductor substrate and post cleaning with the effect of preventing particles attaching to the semiconductor substrate. However, it is respectfully submitted that Niwayama likewise fails to disclose that the faster etching rate treatment is performed for removing small defects or micro-cracks from a surface of the glass substrates while the less fast etching rate treatment is performed for finely flattening the surface of the glass substrate.

On the contrary, Niwayama merely discloses etching a silicon oxide film without small defects or micro-cracks. Accordingly, flattening the surface of the Niwayama substrate is not necessary for the process of etching the silicon oxide film. Therefore, Niwayama provide no motivation or suggestion to the skilled artisan familiar with Spierings to manufacture a liquid crystal display device by employing two different etching treatments, a first etching treatment having a faster etching rate and removing small defects or micro-

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cracks from a surface of glass substrates of the LCDD and the second etching treatment being less fast than the first to flatten the surfaces of the glass substrates.

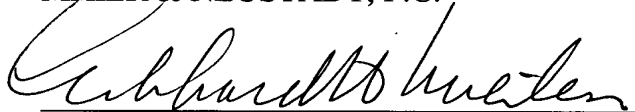
Accordingly, from above discussion described, it is respectfully submitted that amended Claim 1 and dependent Claims 2 and 3 are patentably distinguishing over Spierings and/or Niwayama.

In view of the similarity between amended Claim 1 and amended Claim 4, Claim 4 is likewise considered to be patentably distinguishing, for the same reasons above noted. Consideration of rejoinder of Claim 4 is respectfully requested.

Consequently, in view of the above comments, the pending claims are believed to be patentably distinguishing over the cited prior art and in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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